<SPECIFICATION>

SPEC.No. ASDIQ-SPE-122(00)
Date: Aug.07,2022

To :

CUSTOMER'S PRODUCT NAME

ASDI PRODUCT NAME:
MBSF1005KF-SERIES

RECEIPT CONFIRMATION

UNCONDITIONAL CONSENT	CONDITIONAL CONSENT

APPROVED	CHECKED

ASDI SIGNATURE

APPROVED	CHECKED	PREPARED
Xianglong Li	Liang Wang	Jiayin Cai

REV.	DATE	DESCRIPTION	APPROVED	CHECKED	PREPARED
00	Aug.07,2022	New release	Xianglong Li	Liang Wang	Jiayin Cai

CAUTION WHEN HANDLING

Before use the products, please read this specification.

CAUTION FOR SAFETY USING

When use the products, be careful to mentioned below for safety using.

CAUTION

*The product should be used within 12 monthes.
Focus on the storage conditions.
Solderability may become weak if it exceeds the period.
*Do not use and store the product in condition of gas corrosion (Salt,Acid,Alkaline).
*The products must be preheated before soldering.
The operating temperature including self-generated heat must be within '-55~+125℃
*Rework by soldering iron;Please keep the mentioned conditions in this specification.
*In case of insert P.C. Board on chassis, do not add mechanical stress to the product.
*Be careful to arrange of non-magnetic field type inductors.
The error may be caused by magnetic field coupling.
*In case handle the products, please use wrist strap for ground static discharge on human body.
The product keeps away from magnet or magnetized things.
*Do not use the product beyond the mentioned conditions in this specification.
*About an application
The products listed on this specification sheet are intended for use in general electronic equipment
(AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.
*The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

1)Aerospace/Aviation equipment
2)Military equipment
3)Seabed equipment
4)Safety equipment
5)Medical equipment
6)Transportation control equipment
7)Power-generation control equipment which directly endanger human life
8)Atomic energy-related equipment
9)Other applications that are not considered general-purpose applications

If you intend to use the products in the following applications, please contact our sales office.
Transportation equipment (cars, electric trains, ships, etc.), Public information-processing equipment, Electric heating apparatus / burning equipment, Disaster prevention/crime prevention equipment
When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.

1.INDEX

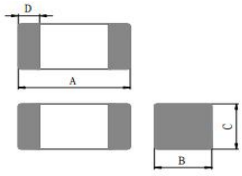
2.Manufacturing Location

China

(1)Features

1.Monolithic inorganic material construction.
2.Closed magnetic circuit avoids crosstalk.
3.S.M.T. type.
4.Suitable for flow and reflow soldering.
5.Shapes and dimensions follow E.I.A. spec.
6.Available in various sizes.
7.Excellent solderability and heat resistance.
8.High reliability.
9.This component is compliant with RoHS legislation and also support lead-free soldering

(2)Dimensions

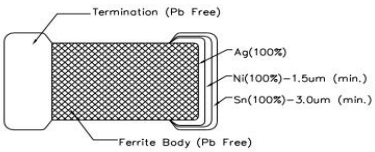


Chip Size	A	B	C	D
	1.00±0.10	0.50±0.10	0.50±0.10	0.25±0.10

(3)Part Numbering

MBSF	1005	KF	-	121	T	01
A	B	C		D	E	F

A: Series
B: Dimension L x W
C: Material Lead Free Material
D: Impedance 121=120Ω
E:Packaging T=Taping and Reel, B=Bulk(Bags)
F:Rated Current 01=100mA

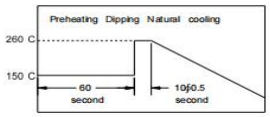
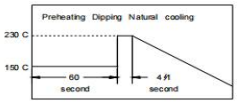
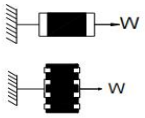
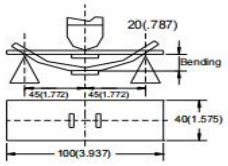
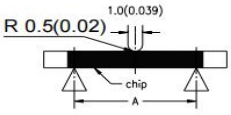


(4)Electrical Specifications

Table 1

ASDI Part Number	Impedance (Ω)	Test Frequency (MHz)	DC Resistance (Ω) max.	Rated Current (mA)
MBSF1005KF-100T05	10±25%	100	0.20	500
MBSF1005KF-110T05	11±25%	100	0.20	500
MBSF1005KF-300T03	30±25%	100	0.20	300
MBSF1005KF-330T05	33±25%	100	0.20	500
MBSF1005KF-470T05	47±25%	100	0.25	500
MBSF1005KF-600T03	60±25%	100	0.25	300
MBSF1005KF-600T05	60±25%	100	0.25	500
MBSF1005KF-600T06	60±25%	100	0.25	600
MBSF1005KF-680T07	68±25%	100	0.25	700
MBSF1005KF-800T05	80±25%	100	0.25	500
MBSF1005KF-101T03	100±25%	100	0.30	300
MBSF1005KF-101T07	100±25%	100	0.30	700
MBSF1005KF-121T01	120±25%	100	0.30	100
MBSF1005KF-121T02	120±25%	100	0.30	200
MBSF1005KF-121T05	120±25%	100	0.30	500
MBSF1005KF-151T01	150±25%	100	0.30	100
MBSF1005KF-181T05	180±25%	100	0.40	500
MBSF1005KF-221T01	220±25%	100	0.40	100
MBSF1005KF-221T06	220±25%	100	0.40	600
MBSF1005KF-301T01	300±25%	100	0.50	100
MBSF1005KF-301T03	300±25%	100	0.50	300
MBSF1005KF-331T08	330±25%	100	0.50	800
MBSF1005KF-471T01	470±25%	100	0.65	100
MBSF1005KF-601T03	600±25%	100	0.80	300
MBSF1005KF-601T05	600±25%	100	0.80	500
MBSF1005KF-102T03	1000±25%	100	1.20	300
MBSF1005KF-152T03	1500±25%	100	1.30	300

(5)Reliability Tests

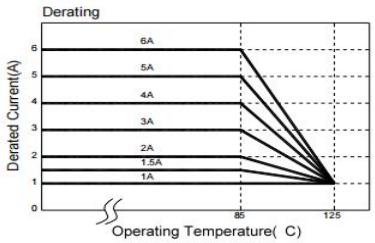
No.	Test item	Performance		Test details
0	Series	MBPF	MBSF	
1	Operating temperature	- 55~+125℃		
2	Storage temperature	- 55~+125℃		
3	Impedance (Z)	Refer to standard electrical characteristics list		HP4291A, HP4287A+16092A
4	Inductance (Ls)			
5	Q Factor			
6	DC Resistance			HP4338B
7	Rated Current			**
8	Temperature Rise Test	30℃ max. (ΔT)		1. Applied the allowed DC current. 2. Temperature measured by digital surface thermometer.
9	Solder heat Resistance	Appearance: No significant abnormality. Impedance change: Within ± 30%.	No mechanical damage. Remaining terminal electrode:70% min.	Preheat: 150℃,60sec. Solder: Sn-Ag3.0-Cu0.5 Solder tamperature: 260±5℃ Flux for lead free: rosin Dip time: 10±0.5sec. 
10	Solderability	More than 90% of the terminal electrode should be covered with solder. 		Preheat: 150℃,60sec. Solder: Sn-Ag3.0-Cu0.5 Solder tamperature: 230±5℃ Flux for lead free: rosin Dip time: 4±1sec.
11	Terminal strength	The terminal electrode and the dielectric must not be damaged by the forces applied on the right conditions. 		For MBPF MBSF Size / Force (Kfg) / Time(sec) 1005 0.2 1608 0.5 2012 0.6 3216 1.0 >25 3225 1.0 4516 1.0 4532 1.5 5750 2.0
12	Flexture strength	The terminal electrode and the dielectric must not be damaged by the forces applied on the right conditions. 		Solder a chip on a test substrate, bend the substrate by 2mm (0.079in)and return.
13	Bending Strength	The ferrite should not be damaged by Forces applied on the right condition. 		Size / mm(inches) / P-Kgf 1608 0.80(0.033) 0.3 2012 1.40(0.055) 1.0 3216 3225 2.00(0.079) 2.5 4516 4532 5750 2.70(0.106) 2.5
14	Random Vibration Test	Appearance: Cracking, shipping and any other defects harmful to the characteristics should not be allowed. Impedance: within±30%		Frequency: 10-55-10Hz for 1 min. Amplitude: 1.52mm Directions and times: X, Y, Z directions for 2 hours. A period of 2 hours in each of 3 mutually perpendicular directions (Total 6 hours).

<table>
<tr><th>No.</th><th>Test item</th><th>Performance</th><th>Test details</th></tr>
<tr><td>15</td><td>Drop</td><td>Drop 10 times on a concrete floor from a height of 75cm</td><td>a: No mechanical damage
b: Impedance change: ±30%</td></tr>
<tr><td>16</td><td>Loading at High Temperature</td><td rowspan="3">Appearance: no damage.
Inductance: within±10%of initial value.

For Bead：
<table><tr><th>Phase</th><th>Temperature(℃)</th><th>Time(min.)</th></tr><tr><td>1</td><td>-55±2℃</td><td>30±3</td></tr><tr><td>2</td><td>+125±5℃</td><td>30±3</td></tr></table>Measured: 5 times</td><td>Humidity: 90~95%RH.
Temperature: 40±2℃.
Duration: 500±12hrs. Measured at room temperature after placing for 2 to 3hrs.</td></tr>
<tr><td>17</td><td>Humidity</td><td>Humidity: 90~95%RH.
Temperature: 40±2℃.
Duration: 500±12hrs.
Measured at room temperature after placing for 2 to 3hrs.</td></tr>
<tr><td>18</td><td>Thermal shock</td><td>ForMBPF MBSF：
Condition for 1 cycle
Step1: -55±2℃ 30±3 min.
Step2: +125±5℃ 30±3 min.
Number of cycles: 5</td></tr>
<tr><td>19</td><td>Low temperature storage test</td><td>Temperature: -55±2℃.
Duration: 500±12hrs.
Measured at room temperature after placing for 2 to 3hrs.</td></tr>
<tr><td>20</td><td>Drop</td><td>Drop 10 times on a concrete floor from a height of 75cm</td><td>a: No mechanical damage
b: Impedance change: ±30%</td></tr>
</table>

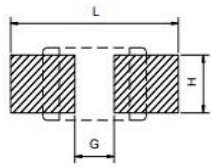
****Derating Curve**

For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over 85℃, the derating current information is necessary to consider with. For the detail derating of current, please refer to the Derated Current vs. Operating Temperature curve.



(6)Soldering and Mounting

6-1,Recommended PC Board Pattern



PC board should be designed so that products are not sufficient under mechanical stress as warping the board.
Products shall be positioned in the sideway direction against the mechanical stress to prevent failure.

6-2,Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. The terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

6-2,1 Lead Free Solder re-flow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1.

6-2,2 Solder Wave:

Wave soldering is perhaps the most rigorous of surface mount soldering processes due to the steep rise in temperature seen by the circuit when immersed in the molten solder wave , typical at 230℃.
Due to the risk of thermal damage to products, wave soldering of large size products is discouraged.
Recommended temperature profile for wave soldering is
shown in Figure 2.

6-2,3 Soldering Iron(Figure 3):

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

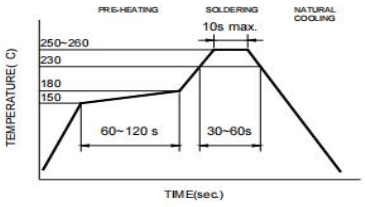


Figure 1. Re-flow Soldering(Lead Free)

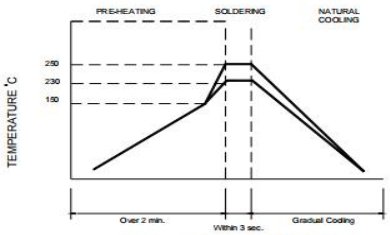


Figure 2. Wave Soldering

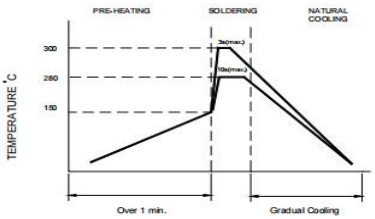
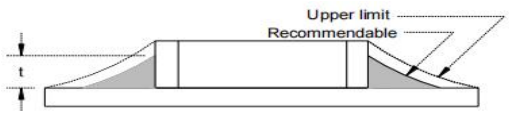


Figure 3. Hand Soldering

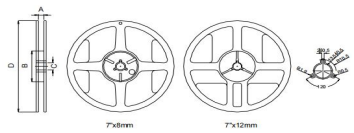
6-2,4 Solder Volume:

Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:



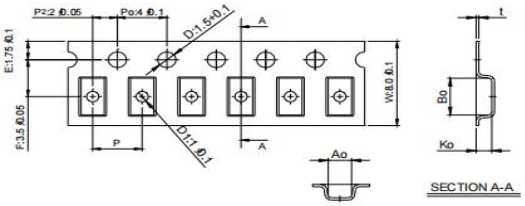
(7)Packaging Information

7-1,Reel Dimension

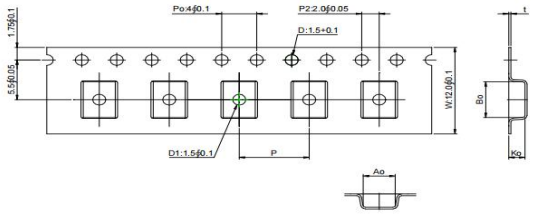


Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60.0±2.0	13.5±0.5	178.0±2.0
7"x12mm	13.5±0.5	60.0±2.0	13.5±0.5	178.0±2.0

7-2,1 Tape Dimension / 8mm



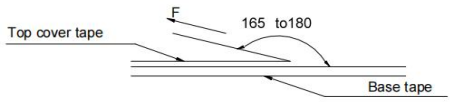
7-2,2 Tape Dimension / 12mm



7-3,Packaging Quantity

Chip Size	575018	453215	451616	322513	321611	201212	201209	160808	100505
Chip / Reel	1000	1000	2000	2500	3000	2000	4000	4000	10000
Inner box	4000	4000	8000	12500	15000	10000	20000	20000	50000
Middle box	20000	20000	40000	62500	75000	50000	100000	100000	250000
Carton	40000	40000	80000	125000	150000	100000	200000	200000	500000
Bulk (Bags)	7000	12000	20000	30000	50000	100000	150000	200000	300000

7-4,Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

Room Temp. (℃)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

(8)Note

·Storage Conditions

To maintain the solderability of terminal electrodes:

1. ASDI products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Temperature: 5 to 30deg.C, Humidity: 75% Max.
3. Recommended products should be used within 12 months form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

·Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.